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IDENTIFIERS	*Workplace Literacy

ABSTRACT

This learning module is designed to enable participants to look at problems from a variety of perspectives, to apply a basic problem-solving strategy, to implement a plan of action, and to identify problems that are of particular importance to their workplace. The module includes units for six class sessions. Each unit includes the following materials: rationale, learning objectives, curriculum notes and references for the instructor, course outline, introduction, evaluations, information sheets, problems to solve, and transparency masters. The six sessions cover these topics: looking at problems from a variety of perspectives, identifying a problem to solve, narrowing a problem, brainstorming, implementing a solution, and evaluating the problem-solving process that was chosen. (KC)

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Colorado Community College and Occupational Education System
United States Department of Education
Corporate, Workforce, & Economic Development, a division of
Pikes Peak Community College
Current, Inc.

Problem Solving: Workplace Strategies for Thoughtful Change

This course operates on the theory that effective problem solving depends on looking at problems from a variety of perspectives. A basic problem solving strategy is taught, which includes dealing with conflict, identifying possible reasons for a problem situation, and devisin and implementing a plan of action for resolution are emphasized. Students identify problems to solve that are of particular importance to their workplace environment.

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INTRODUCTION

The Workplace Classroom is a set of 11 curriculum modules created by workplace educators from Pikes Peak Community College in collaboration and partnership with employees of Current, Inc., a large greeting card company in Colorado Springs, Colorado. The partnership was formed through an 18-month federal workplace research and development grant from the United States Department of Education awarded to the Colorado Community College and Occupational Education System. Teachers in the project designed, developed and field-tested curricula and materials for the 11 basic skills courses through the process of identifying and understanding the culture of the workplace and the learning needs of the individuals working within it.

The Pikes Peak staff chose not to rely on ready-made materials or programmed texts with which to teach classes. Instead, teachers and curriculum specialists interviewed employees, created job profiles, developed customized assessments, and invited student participation in the development of class content. The result is a unique set of curriculum modules in learning to learn, reading, writing, communication, problem solving, English as a second language, math and algebra that reflect learning needs of real people in a large printing/manufacturing environment. These modules were designed as six week, two hour classes, but the learning rationale and intentions could easily be modified to accommodate longer or shorter sessions.

The idea of following a design process involving the active and continuous commitment and participation of the employee and the employer provides a fresh look at the development of curricula and instruction. The goal of this process is to develop a curriculum product that enhances the basic literacy skills of adults and increases critical thinking and problem solving skills that are easily transferred to occupational improvement. The Pikes Peak staff felt that the best way to reach this goal was to involve employees and employers in the many levels of curriculum development and design.

We believe that these curriculum products are genuine reflections of sound adult learning theory that says adults must have relevant learning experiences that build on prior knowledge and in some way advance positive change in their daily work lives. These modules were built through the active participation and assessment of the adult students for whom they were designed. Those of us who developed these products encourage other workplace educators to use them in part or as complete modules, keeping in mind that their very design welcomes the change and diversity that other workplace environments are sure to lend to them. We feel that the authenticity of our curricula will provide ideas and incentive to other teachers and curriculum specialists who are beginning new programs or are looking for ways of improving existing curricula.

Best of luck with any or all of the Workplace Literacy Modules.

Rita Moore

Rita Moore, Project Leader
Workplace Literacy Grant Pikes Peak Community College

"Many of us are good at detecting problems. This course proposes moving on toward solving them."

-- Problem Solving Student

PROBLEM SOLVING:
Workplace Strategies for Thoughtful Change

Rationale

Good problem solving is important to all aspects of life: work, home, and relationships. Unfortunately, it's a skill that's rarely taught. The success or failure of this class rests, at least in part, on the active involvement of the students. The problem should be one that is real to them and one they can truly tackle. Likewise, they should feel ownership in the solution and believe that it can actually be implemented. Of course, the feasibility of this depends on the culture of the company.

The material presented here covers a successful problem solving strategy that includes the following steps: identifying the key problem, gathering information, exploring and choosing solutions, implementing the solutions, and reviewing the problem-solving process for improving it. The sessions are set up to break the process into five manageable chunks. However, you may find a different pacing works better for you. For instance, instead of spreading the strategy over five sessions, it could work equally well to spend one session walking through the process with a sample problem and then spend the remaining four tackling a real workplace problem.

Rita Moore
Project Leader

Rita Moore and Janelle Diller
Authors

PROBLEM SOLVING: Workplace Strategies for Thoughtful Change
SESSION I

"My negative outlook became more positive each week. I liked the way I felt when I left the class each week."

Problem Solving Student

Rationale:

Underlying successful problem solving is the ability to stretch one's thinking, to step out of one's mental box. This session is a fun beginning to building fluency, flexibility, elaboration, and originality in thinking. This creates a foundation for the remaining five sessions. As participants meet roadblocks, remind them to step outside their boxes, to look at the problem again from a different framework.

Learning Intentions:

- Participants will recognize the need to actively look at problems from a variety of perspectives.
- Participants will practice ways to improve their fluency, flexibility, elaboration, and originality in their thinking.

Curriculum Notes:

- Curriculum notes and references follow course outline.

Course Outline:

I. Administrative Details (15 min.)

Introduce self
Participant data sheets
Participant learner packets
4x6 cards: name
SS#
work dept., name and number
extension
work days and hours
home phone?
a little info

II. Problem Solving is Central to the Workplace

"If you always do what you always did, you'll always get what you always got."

READ: "Zen and the Art of Motorcycle Maintenance" by Robert Pirsig

WRITE: List some typical problems to solve at work. These may be related to your job activity directly or to communication issues.

or

Describe a work problem that had gone unsolved for a long time that was eventually solved. How was it solved? What made the difference?

DISCUSS: Introduce yourself and give one of your examples.

III. Problem Solving requires that we look at problems from a wide variety of ways. To do this, we need to build skills in fluency, flexibility, elaboration, and originality.

- FLUENCY

"Nothing is more dangerous than an idea, when it's the only one you have."

EXAMPLE: Thomas Edison--Light bulb

APPLICATION ACTIVITY: Get into groups and list as many different kinds of birds as you can.

- FLEXIBILITY

"Discovery consists of looking at the same thing as everyone else and thinking something different."

--Albert Szent-Gyorgyi

EXAMPLE: Barbed wire

APPLICATION ACTIVITY: Cross out six letters and end up with a common household word. (individually)

BSIANXALNETATESRS

(How flexible were you when you listed kinds of birds?)

III. Continued:

- ELABORATION
"Our heads are round so that our thinking can change direction." --Francis Picabia

EXAMPLE: Rat bell

OPTION 1: Do the picture completion exercise individually. Then get back into groups and choose 2 or 3 of the best designs and have those people draw them on flipchart paper for the rest of the class.

OPTION 2:
"Necessity is the mother of invention."

--Latin Proverb

"Invention is the mother of necessity."

--Thorstein Veblen

The company has decided to develop a marketing strategy for male pantyhose. In groups, come up with ideas for the following:

Name of product
Where to sell
Advertising methods
Gimmicks to attract male customers
Adjectives to describe the product

- ORIGINALITY
"Everyone is a genius at least once a year; a real genius has his original ideas closer together."

--G.C Lichtenberg

EXAMPLE: Hen goggles
Zipper

APPLICATION ACTIVITY: Come up with a creative way to write half of eight.

- PUTTING THE FOUR TOGETHER:
Give each group one of the following statements. After 5-10 minutes, each group should give a quick presentation of what they've come up with. Encourage the use of fluency, flexibility, elaboration, and originality.

III. Continued:

- How would the world be different if people were born with wheels instead of feet?
- What if money grew on trees and everyone could pick as much as they wanted?
- What advantages and disadvantages would there be if people communicated by scent instead of speech?

- WRITE:
  Go back to your list or the list we made. Is there a problem on the list that you can look at in a different way? What ideas do you have about possible solutions?

IV. Evaluation

A. Daily journal:
   Students record comments about the class, what they've learned and how they can use their new skills on the job.

B. Assignment: Come up with three suggestions for a real, solvable problem.

CURRICULUM NOTES

II. **Problem Solving is Central to the Workplace. READ:**
I like to begin the problem solving course by reading a selection from Chapter 2 in *Zen and the Art of Motorcycle Maintenance* by Robert Pirsig in which he describes a failed motorcycle trip. I read the selection that begins and ends with the following paragraphs:

> "We [Pirsig and his son, Chris] were on a little six-and-one-half-horsepower cycle, way overloaded with luggage and way underloaded with common sense. The machine could do only about forty-five miles per hour wide open against a moderate head wind. It was no touring bike. . .
> "I have kicked myself mentally a hundred times for that stupidity and don't think I'll ever really, finally get over it. Evidently what I saw sloshing around was gas in the reserve tank which I had never turned on. I didn't check it carefully because I assumed the rain had caused the engine failure. I didn't understand then how foolish quick assumptions like that are. Now w are on a twenty-eight-horse machine and I take the maintenance of it very seriously."

The story is a wonderful example of how most of us problem solve: We start out assuming what the real problem is or isn't and choose our solutions accordingly. It sets the stage nicely for encouraging people to stretch their thinking.

II. **Problem Solving is Central to the Workplace. WRITE:**
As participants share their ideas, write them on a flipchart or overhead. At the end of the class, have participants refer back to this list as they rethink how to approach problems from a new perspective.

III. **Fluency, flexibility, elaboration, originality**
This section can be a lot of fun for everyone. I encourage participants to work in groups so no one feels too lost or too inept. Feel free to explore more examples of each of these as time permits. To illustrate each skill, I've used examples of real patents.

Patent Illustrations:

Fluency--Thomas Edison has 1,093 patents in his name. In a perfect world, this would be an incredible example of fluency. In the real world, it represents the fluency of ideas that came out of his group of inventors, which at times worked in almost sweatshop like conditions.

Flexibility--Although fences have been used in one form or another for thousands of years, it wasn't until the invention of barbed wire that fencing could be done that was fast, cheap, and effective. The result of this flexibility of thinking changed the West.

III. **Fluency, flexibility, elaboration, originality Continued:**

Elaboration--The rat bell is a fun look at how not every idea is necessarily a good one. The idea behind this is that the rat pokes its head through a collar into the trap to retrieve the cheese. When it pulls its head out of the trap, the collar and a bell stay on the rat. As the rat runs around, the bell scares aware all the other rats. Of course, we'll never know if the rat trap didn't succeed because the bell actually attracted other rats.

Originality--Again, not all ideas are good or even necessary ones, no matter how original. The hen goggles are a good example of this. The zipper, however, really represents all four skills.

Exercises:

Fluency--Give participants three to five minutes to list as many birds as possible. When they're finished, compare how many each group has come up with. As a lead-in to flexibility, have each group identify three birds they think the other groups won't have. Flexible thinking should produce a wide range of birds, not just the feathered flying ones. For instance, do they have bird of paradise? Heckle and Jeckle? Woodstock? Birdseye view/vegetables?

Flexibility--The answer to this is BANANAS.

BSIANXALNETATESRS

Elaboration--Option 1 works well for some people, but for the unartistic, it's difficult. You might allow them to start off in pairs and then move into groups. Option 2 is more involved. Depending on the group, it too can be difficult. If necessary, try brainstorming first as a whole group, or do the exercise as a class rather than small groups.

Originality--If you give this orally instead of on the overhead, you'll get a more varied response. For instance, one group came up with a half-eaten apple as their "half of ate."

Class: _____

Date: _____

Instructor: _____

	Name	Dept. Number	S. S. Number
1.			
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SKILLS FOR A COMPETITIVE WORKFORCE
PARTICIPANT DATA SHEET

Please fill out the following information. Print or write clearly. This information will be used for demographic and statistical purposes only.

SECTION I (Identification)

Name:_____ Social Security Number: ___ - ___ - ____
Last Name, First Name Middle Initial

Street Address:_____ City:_____ Zip Code:_____

Phone Number: (___) ___ - ____

Department: _____ Position:_____

SECTION II (demographic information)

1. Yrs. with company (circle one): a. unemployed b. 0-5 c. 6-10 d. 11-15 e. over 16

2. Age: __ 3. Sex: M F

4. Ethnicity (circle one): a. White b. Black c. Hispanic d. American Indian/Alaska Native e. Asian/Pacific Islander f. Other

5. Single: Y N
Head of Household: Y N

6. Is English your second language? Y N

7. Participating in (circle one or more):
   a. Basic Skills Program
   b. GED Program
   c. ESL Program

SECTION III (outcome information)

Assesment Planning:

8. Course Title:_____ (check one: __ Basic Skills, __ GED, __ ESL)

	Goals	Assessment Tool	Pre-Asses Results	Post-Asses Results	Improved
9.	Test Higher on Basic Skills: _____				Y N
10.	Improved Communication Skills:				Y N
11.	Increased Productivity:				Y N
12.	Improved Work Attendance:				Y N
13.	Increased Self-Esteem:				Y N

14. Contact Hours: __ __ __ __

15. Course Title:_____ (check one: __ Basic Skills. __ GED. __ ESL)

	Goals	Assessment Tool	Pre-Asses Results	Post-Asses Results	Improved
16.	Test Higner on Basic Skills: _____				Y N
17.	Improved Communication Skills:				Y N
18.	Increased Productivity:				Y N
19.	Improved Work Attendance:				Y N
20.	Increased Self-Esteem:				Y N

21. Contact Hours: __ __ __ __

22. Course Title:_____ (check one: __ Basic Skills. __ GED. __ ESL)

	Goals	Assessment Tool	Pre-Asses Results	Post-Asses Results	Improved
23.	Test Higner on Basic Skills: _____				Y N
24.	Improved Communication Skills:				Y N
25.	Increased Productivity:				Y N
26.	Improved Work Attendance:				Y N
27.	Increased Self-Esteem:				Y N

28. Contact Hours: __ __ __ __

29. Course Title:_____ (check one: __ Basic Skills. __ GED. __ ESL)

	Goals	Assessment Tool	Pre-Asses Results	Post-Asses Results	Improved
30.	Test Higner on Basic Skills: _____				Y N
31.	Improved Communication Skills:				Y N
32.	Increased Productivity:				Y N
33.	Improved Work Attendance:				Y N
34.	Increased Self-Esteem:				Y N

35. Contact Hours __ __ __ __

EVALUATION

STUDENT DAILY LOG

NAME:

DATE:

CLASS:

1. What did you learn today? What did you find useful about the lesson? How was it interesting?

2. What did you find not necessarily useful, and what could have been done to improve the effectiveness of the lesson?

3. What other reactions do you have to the class, materials, discussion, etc.?

4. Are you comfortable with the material? Why or why not?

5. How have you used any of the information learned in previous classes?

STUDENT EVALUATION

Pre-Evaluation

Name: _____ Date: _____

Course: _____ Instructor: _____

GOALS	1 20%	2 40%	3 60%	4 80%	5 100%
I need to improve my communication skills.					
I need to improve my productivity.					
I need to improve my work attendance.					
I need to improve my self-esteem.					

List 4 goals related to the following that you want to improve in:

Communications: _____

_____

Reading: _____

_____

Writing: _____

_____

Math: _____

_____

Rate yourself on a scale of 1-5 as to where you are with these goals. 1 would be the lowest and 5 would be the highest.

If you always do what you always did, you'll always get what you always got.

WRITE:
List some typical problems to solve at work. These may be related to your job activity directly or to communication issues.

or

Describe a work problem that had gone unsolved for a long time that was eventually solved. How was it solved? What made the difference?

FLUENCY

FLEXIBILITY

ELABORATION

ORIGINALITY

"Nothing is more dangerous than an idea, when it's the only one you have."

Fig 1

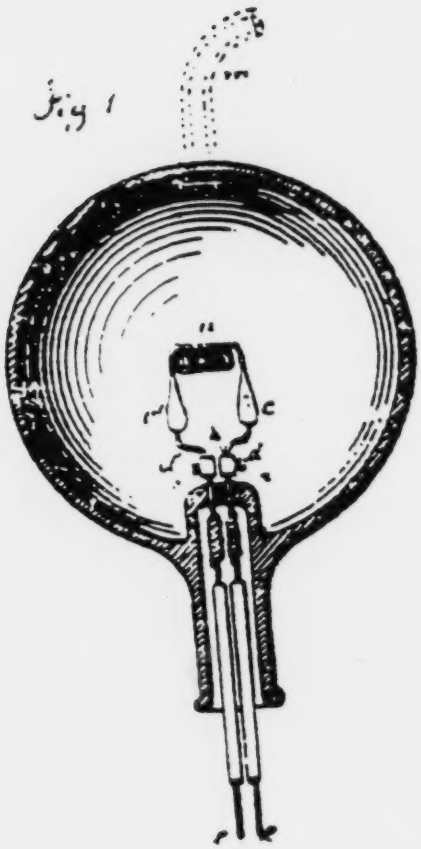


Fig 3

List as many different kinds of birds as you can.

"Discovery consists
of looking at the same thing
as everyone else
and thinking something different."

–Albert Szent-Gyorgyi

FIG.I.

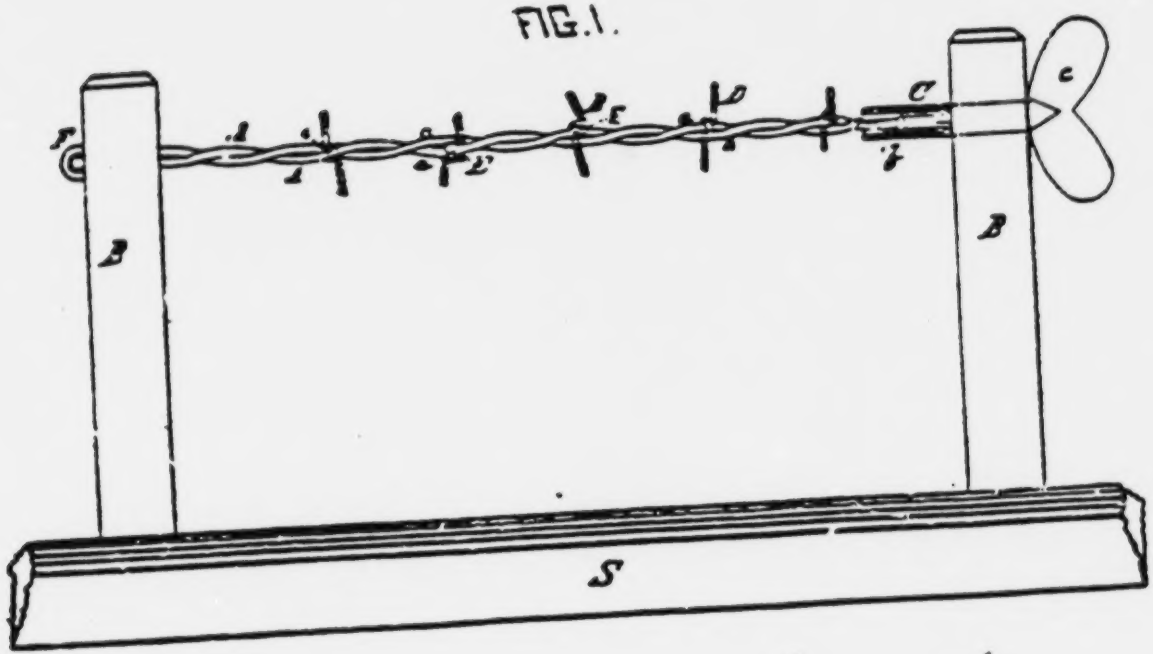
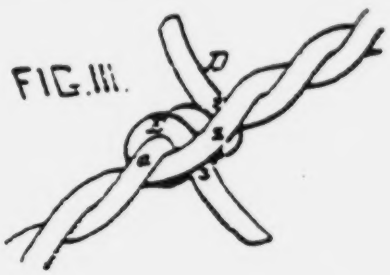


FIG.II.

FIG.III.



Cross out six letters and end up with a common household word.

BSIANXALNETATESRS

"Our heads are round so that our thinking can change direction."

–Francis Picabia

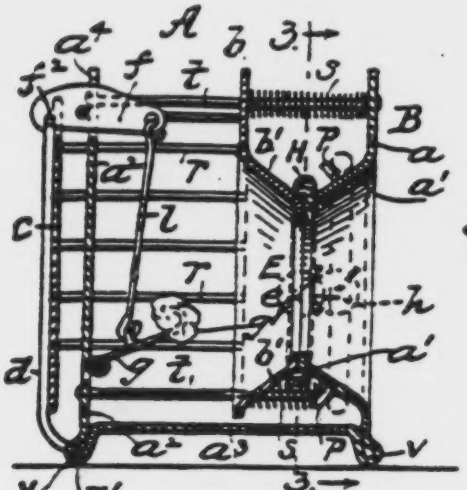


FIG. 1.

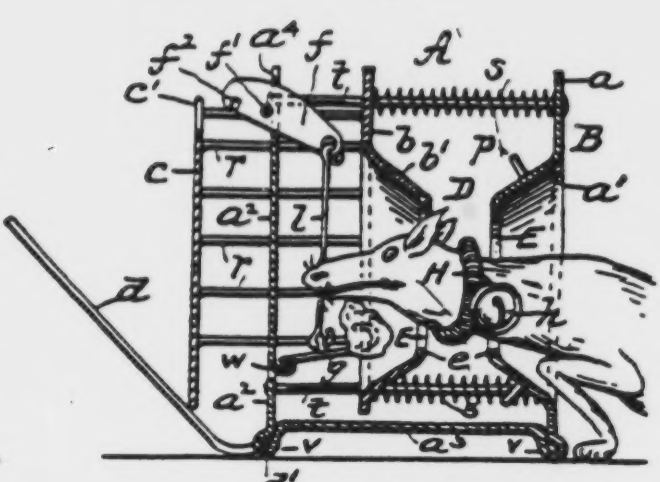


FIG. 2.

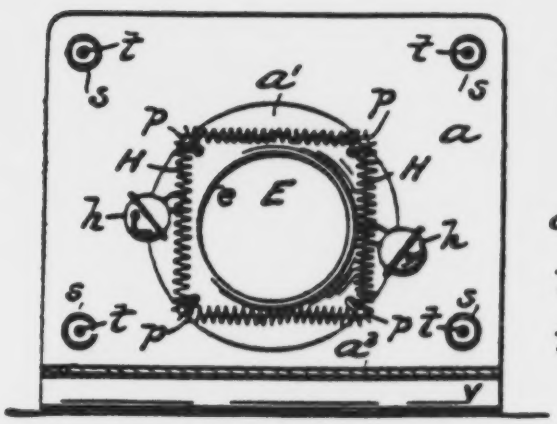


FIG. 3.

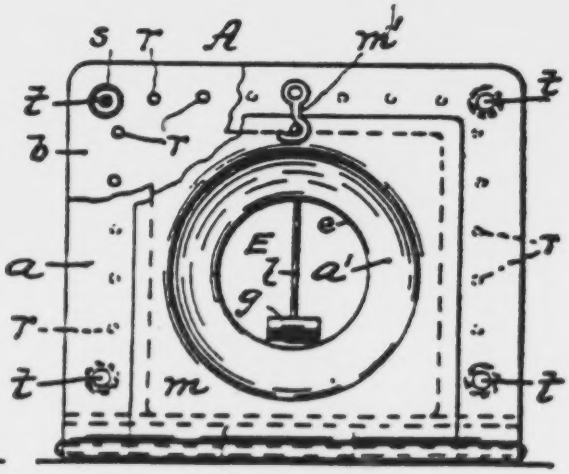
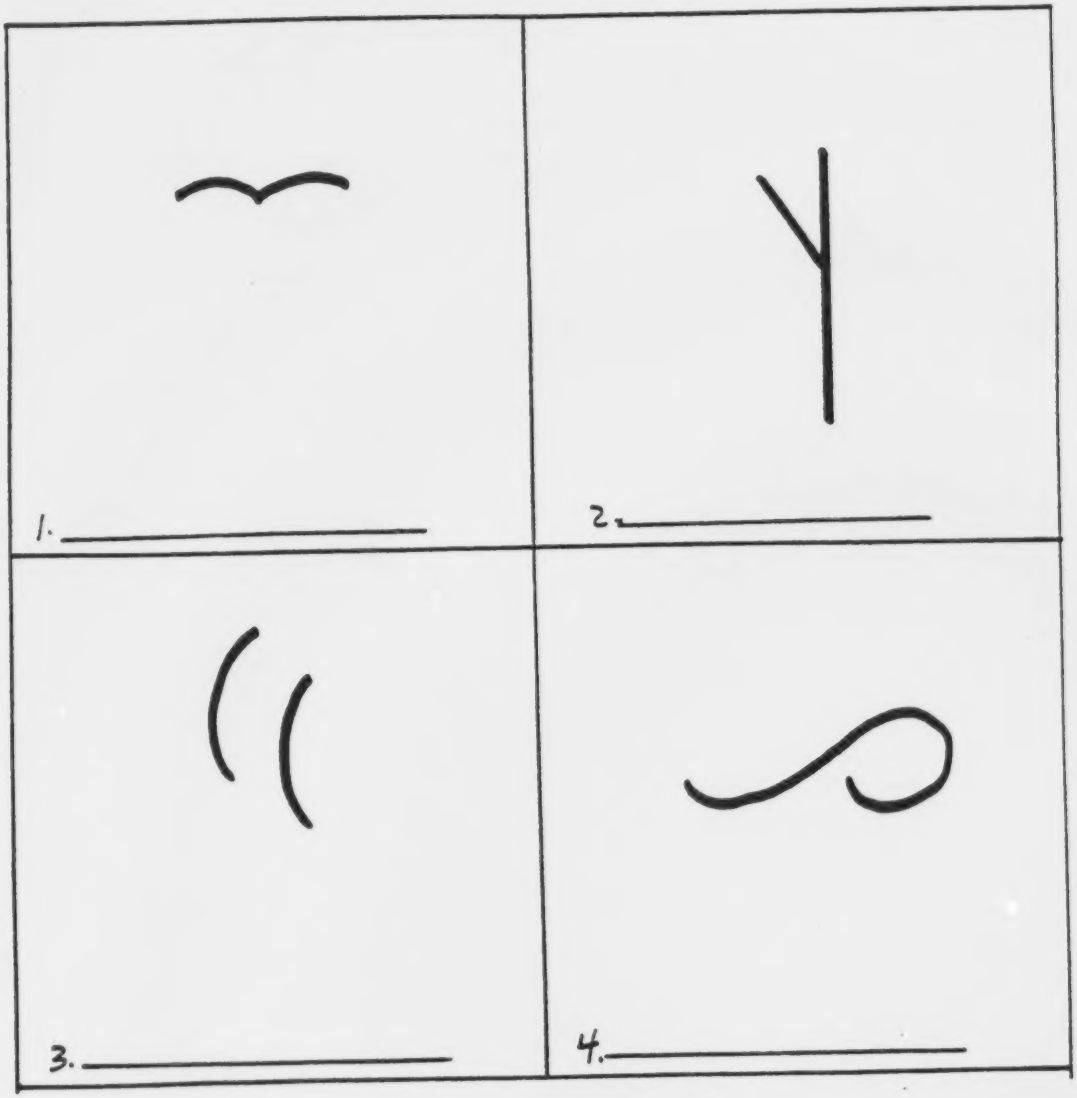


FIG. 4.

FIG. 5.

PICTURE COMPLETION

By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.



"Necessity is the mother of invention."
–Latin Proverb

"Invention is the mother of necessity."
–Thorstein Veblen

"Everyone is a genius at least once a year; a real genius has his original ideas closer together."

--G.C Lichtenberg

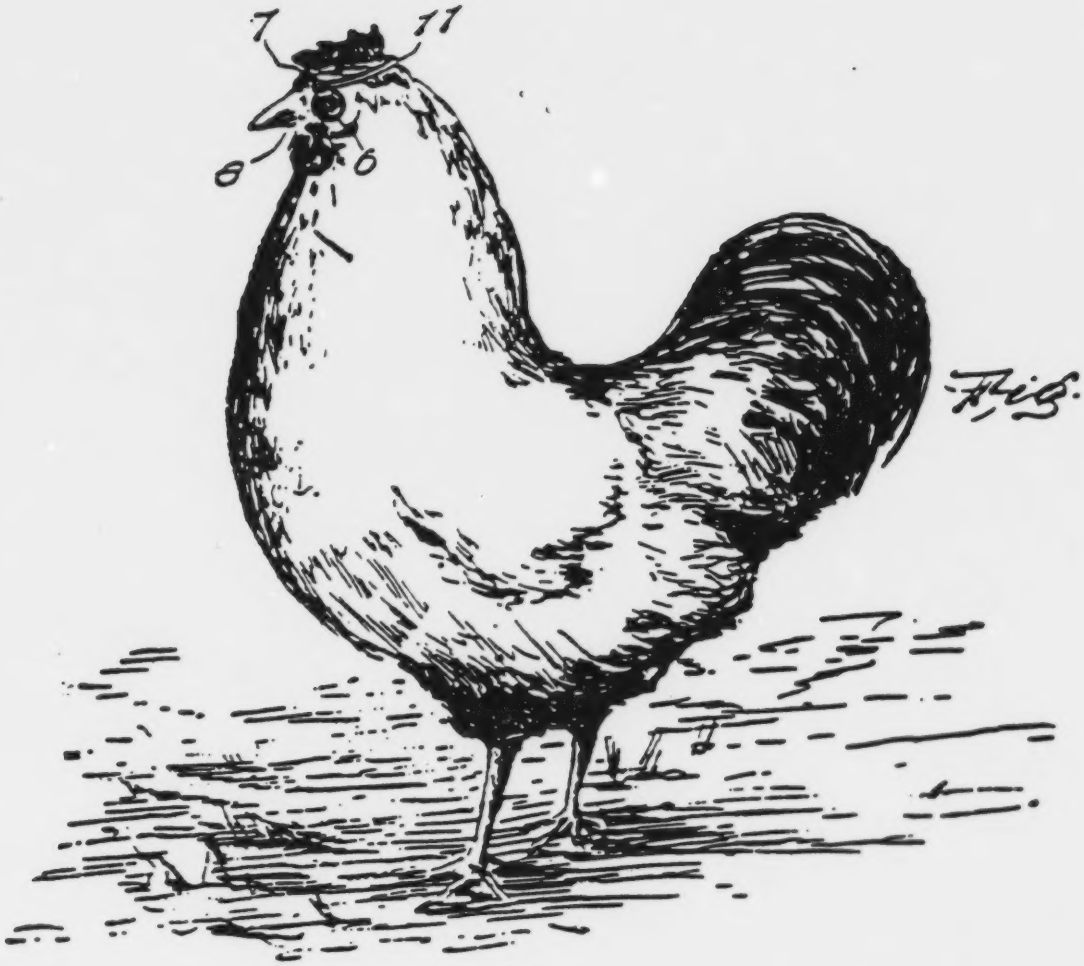


Fig. 1.

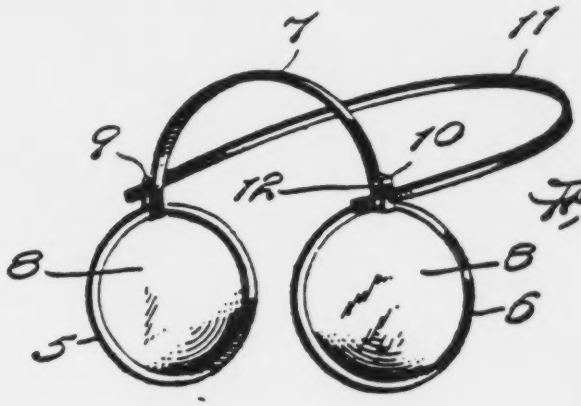


Fig. 2.

Fig. 1.

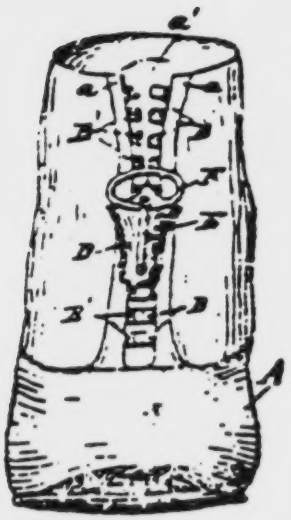


Fig. 2.

Fig. 3.

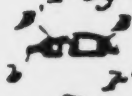


Fig. 4.

Fig. 5.

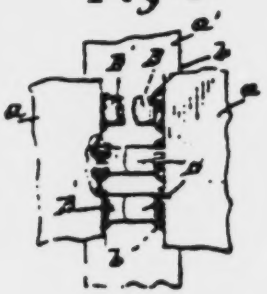


Fig. 6.

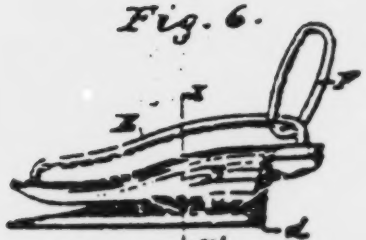


Fig. 7.

Fig. 8

Fig. 9.

Fig. 10.

PROBLEM SOLVING: Workplace Strategies for Thoughtful Change
SESSION II

"My self-esteem has improved during this experience as I worked with people whom I've never met."

Problem Solving Student

Rationale:

Successful problem solving depends on choosing a good problem. The best problems are well defined and within the jurisdiction of the problem solvers. An important part of identifying a good problem is to analyze the environment or culture for problem solving, which will vary dramatically from company to company. Working together as a group to ferret out a problem that is neither too simple nor too unwieldy is the goal of this session.

Learning Intentions:

- Participants will recognize that the environment for problem solving varies from company to company.
- Participants will practice brainstorming methods to identify a problem to solve.
- Participants will recognize the importance of looking at problems using fluency, flexibility, elaboration, and originality.

Curriculum Notes:

- Curriculum notes and references follow course outline.

Course Outline:

I. **REVIEW:** Fluency, Flexibility, Elaboration, Originality

READ: "What is Creative Thinking?" by Roger Von Aech from *A Whack Book*, pp 6-7

APPLICATION ACTIVITY: In groups, list as many things as you can think of that come in 3's.

II. Problem Solving

A. DISCUSS:
- What is the culture at this company for problem solving?
- Who is usually involved?
- Who has the final say?
- What avenues are there for solving problems?
- Are different kinds of problems solved by different people? (technical, personnel, administrative, etc.)
- Are you encouraged as an individual to participate in solving problems?
- Are your ideas taken seriously?
- Are the "Basic Principles" and "Ground Rules" followed? (See handouts)
- How does this vary from department to department?

B. Identify which of the above contribute to good problem solving and which hinder it.

C. Begin the process
- Guidelines for brainstorming
- Pitfalls to Avoid

D. READY
- Identify and Define the Problem
- Divide into groups to begin process
  - Choose your problem
  - Identify the key problem using questions (Who, What, Where, Why, When, and How), F.A.S.T. or webbing
- Gather information

III. Evaluation

A. Daily Journal
Students record comments about the class, what they've learned and how they can use their new skills on the job.

CURRICULUM NOTES

I. **Review Application Activity**:
This session and the following all begin with an exercise in fluency, flexibility, elaboration, and originality. Feel free to mix them around or come up with your own as may be appropriate.

Listing the items that come in 3's is much like the bird list from Session 1. Encourage flexibility as well as fluency. Ideas are fun and endless: for example triangle; trimester; three little pigs; *My Three Sons;* the three stooges; Huey, Duey, and Louie; clover; triceratops.

II. **Problem Solving**
D. Ready 1 & 2
The goal for this session is to identify the problem the class wants to work on. Use the list generated in the first session as a starting point. Most likely, participants will need to gather more information before they can really zero in on what the key problem is. The challenge here is to decide on a problem that's general enough that all the students can relate to it but not so large that it's insurmountable. This session (and the third session if you don't accomplish it here) is by far the most critical and challenging. If you come up with a well-defined problem, the rest will more likely fall into place. If you don't, you'll wrestle with an octopus for the next three sessions.

Encourage brainstorming to help students view the problem from a variety of perspectives. The F.A.S.T. is an interesting way to do this, although not every problem will neatly fit every aspect of F.A.S.T., the technique often produces new and interesting ideas. Use it in this way:

Feelings--What feelings do you or others have about this problem? What feelings cause it? Are a result of it? What needs to be changed?

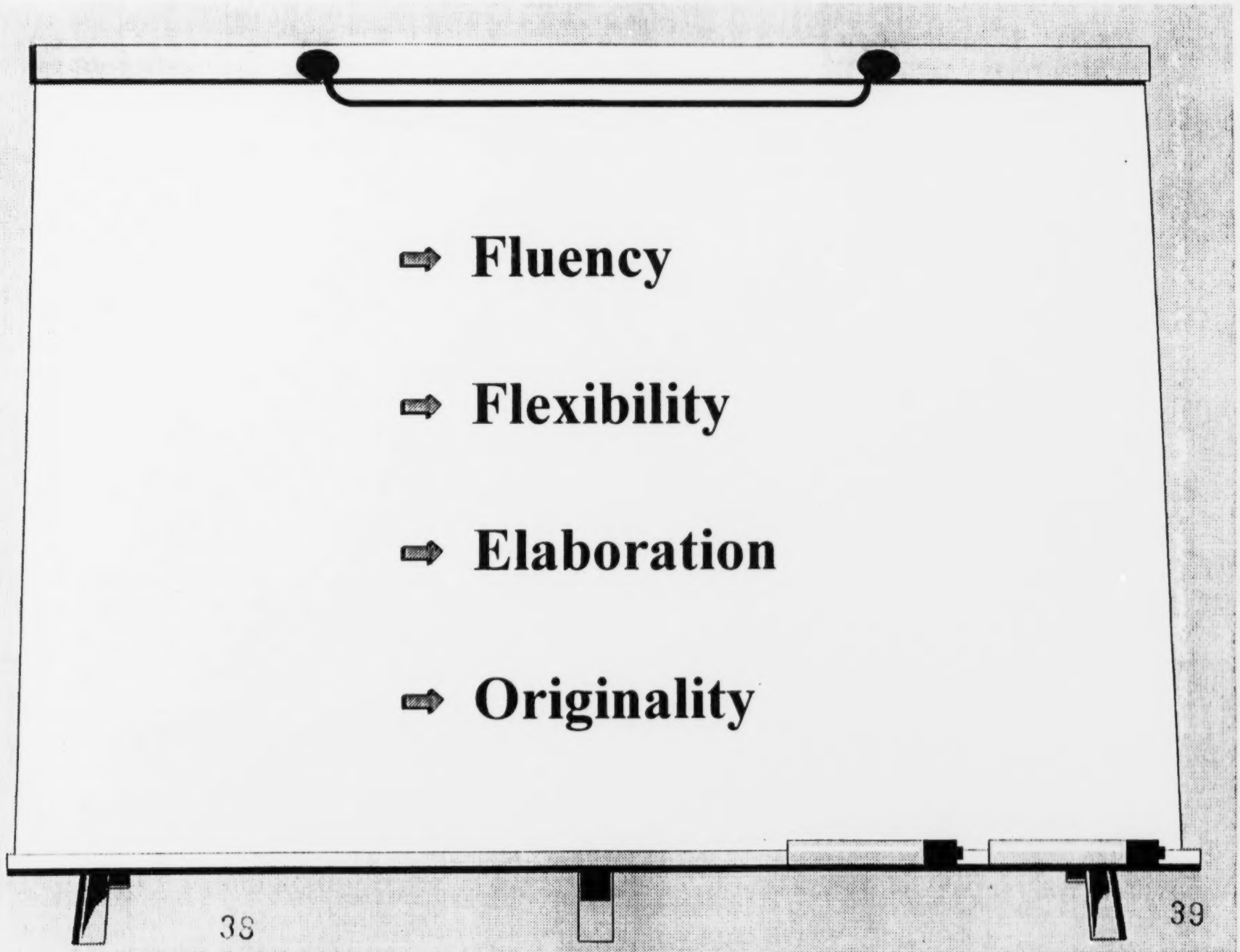
Alternative Viewpoints--What is the opposing viewpoint about this problem? Who would have a different opinion? Why?

Senses--What do you see, taste, touch, smell, and hear as a result of this problem? Which of these are part of the cause?

Time--How was this problem viewed a year ago? 10 years ago? 50 years ago? How will it be viewed a year from now? 10 years from now?

II. Problem Solving
D. Ready 3

Generally, students will need to have more information about any problem they choose to solve. Encourage them to gather additional information before the next class. This may include interviewing co-workers or supervisors, collecting statistical data, or researching HR documents.


➡ Fluency
➡ Flexibility
➡ Elaboration
➡ Originality

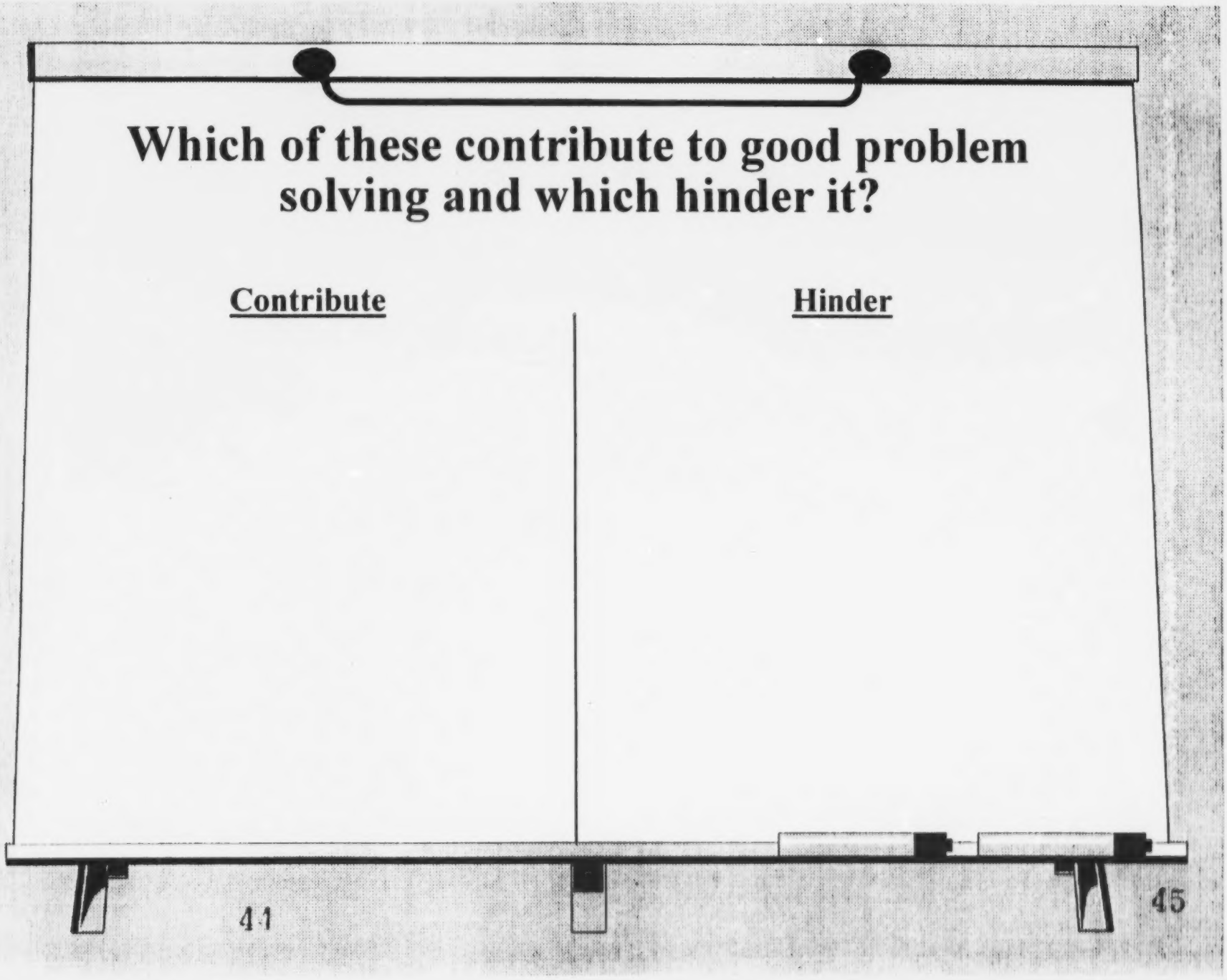
In groups, list as many things as you can think of that come in 3's.

What is the culture at your workplace for problem solving?

- **Who is usually involved?**
- **Who has the final say?**
- **What avenues are there for solving problems?**
- **Are different kinds of problems solved by different people? (technical, personnel)**
- **Are you encouraged as an individual to participate in solving problems?**
- **Are your ideas taken seriously?**
- **Are the "Basic Principles" and "Ground Rules" followed?**
- **How does this vary from department to department?**

Which of these contribute to good problem solving and which hinder it?

Contribute	Hinder



Brainstorming

Guidelines for Brainstorming

Don't critique ideas.

Don't take time to evaluate ideas; it interrupts the flow of ideas. Evaluating ideas is another, later step in the process.

Don't kill or discourage contributions with judgmental remarks such as
That is ridiculous! or
We've already tried that! or
Who ever heard of that?

Use freewheeling imagination.

Let your mind work freely. Don't prevent ideas from emerging by rigidly adhering to logical thinking. Don't feel bound by budget, time, staff, or other resource constraints. Share mental images, synonyms, plays-on-words, free associations, farfetched ideas.

Build on others' ideas.

Combine, expand, hitchhike, piggyback.

Aim for quantity.

The more ideas you can bring out, the better. Don't worry about duplicates. You are not aiming for quality at this point, only quantity.

Record each idea.

Record each idea on flipchart paper exactly as it is presented. Try to keep it brief but faithful to the wording of the presenter.

READY:

IDENTIFY
AND
DEFINE
THE PROBLEM

BRAINSTORM
ALL OF THE
PROBLEMS OR DIFFICULTIES
YOU CAN THINK OF;
ASK QUESTIONS!

What's the problem?

What is the *key* problem?

What's wrong?

Who is affected by this problem?

Where does it occur?

When does it happen?

How does it happen?

Why does it happen?

What happens as a result of this problem?

Why is that?

What could do that?

What are some possible causes of this problem?

What do you know already?

What's unknown?

Describe the problem

Give an example

Say it another way

Have you ever seen this problem before?

Is it similar to another problem you or a member of your team has already found a solution to?

What other information do you need?

- Draw on prior knowledge
- Build new knowledge
- Observe, discuss, read

PROBLEM SOLVING: Workplace Strategies for Thoughtful Change
SESSION III

"This class helped develop a friendship with one co-worker and a positive relationship with another."

Problem Solving Student

Rationale:

This session focuses in on further narrowing the problem. What is the key issue? What are some causes for the problem? What happens as a result of it? By examining the issue from a variety of angles--by stepping out of the box--one can gain a clearer picture of what the true problem is. Sometimes this means gathering more information; often, even more information must be gathered after the problem is identified.

Learning Intentions:

- Participants will analyze their relationship to the company and the company's relationship to them.
- Participants will recognize the importance of clearly identifying a problem.

Curriculum Notes:

- Curriculum notes and references follow course outline.

Course Outline:

I. **A. Review: What is the climate at Current for problem solving?**

B. Quote from Scott Peck from *A World Waiting to be Born*, p.33

What deposits/withdrawals has Current made in your bank? What have you deposited/withdrawn?

C. WARMUP: In groups, list as many things as you can think of that come in 3's.

II. Ready--Work as a class to define a specific problem

A. Continue brainstorming on your problem
   1. Review brainstorming rules

   2. "A new idea is delicate. It can be killed by a sneer or a yawn; it can be stabbed to death by a quip and worried to death by a frown on the right man's brow."

      --Charles Brower

B. Identify the key problem

III. Set: Generate and Explore Solutions

A. Begin brainstorming practical solutions for the chosen problem.
   1. Ask questions
   2. Brainstorm using fluency, flexibility, elaboration, and originality

IV. Evaluation

A. Daily Journal
   Students record comments about the class, what they've learned and how they can use their new skills on the job.

B. HOMEWORK ASSIGNMENT:
   1. Continue to gather information as needed.
   2. Try to think of at least five solutions for the chosen problem.

CURRICULUM NOTES:

I. **B. Quote from Scott Peck**
The deposit/withdrawal activity comes from Stephen Covey and from Philip Osborne's book *Parenting for the '90s*. This exercise always generates a lot of discussion; it also helps students understand that often the players in any problem aren't all black or all white.

I. **C. Warmup**
Think of as many things as you can that come in 3's.

This is a fun fluency/flexibility exercise. You might start out brainstorming as an entire group to get them thinking, and then divide them into small groups. As with the birds in Session 1, have them choose three that they think the other groups won't come up with. Here are a few to get you started thinking: triangle, triceratops, 3 billy goats gruff, 3-toed sloth, 3 blind mice, *Charlie's Angels*, trimester, tricycle, triathelete, *My Three Sons*, traffic lights, and clover.

II. **Ready - Work as a class to define a problem. A. and B.**
Continue using the brainstorming techniques as needed to focus in on the key problem to solve. As students work, they should come to the realization that very few problems are straight-forward, cut-and-dried issues. Good problem solving depends on identifying what can be fixed and what can't be and how to deal with it accordingly.

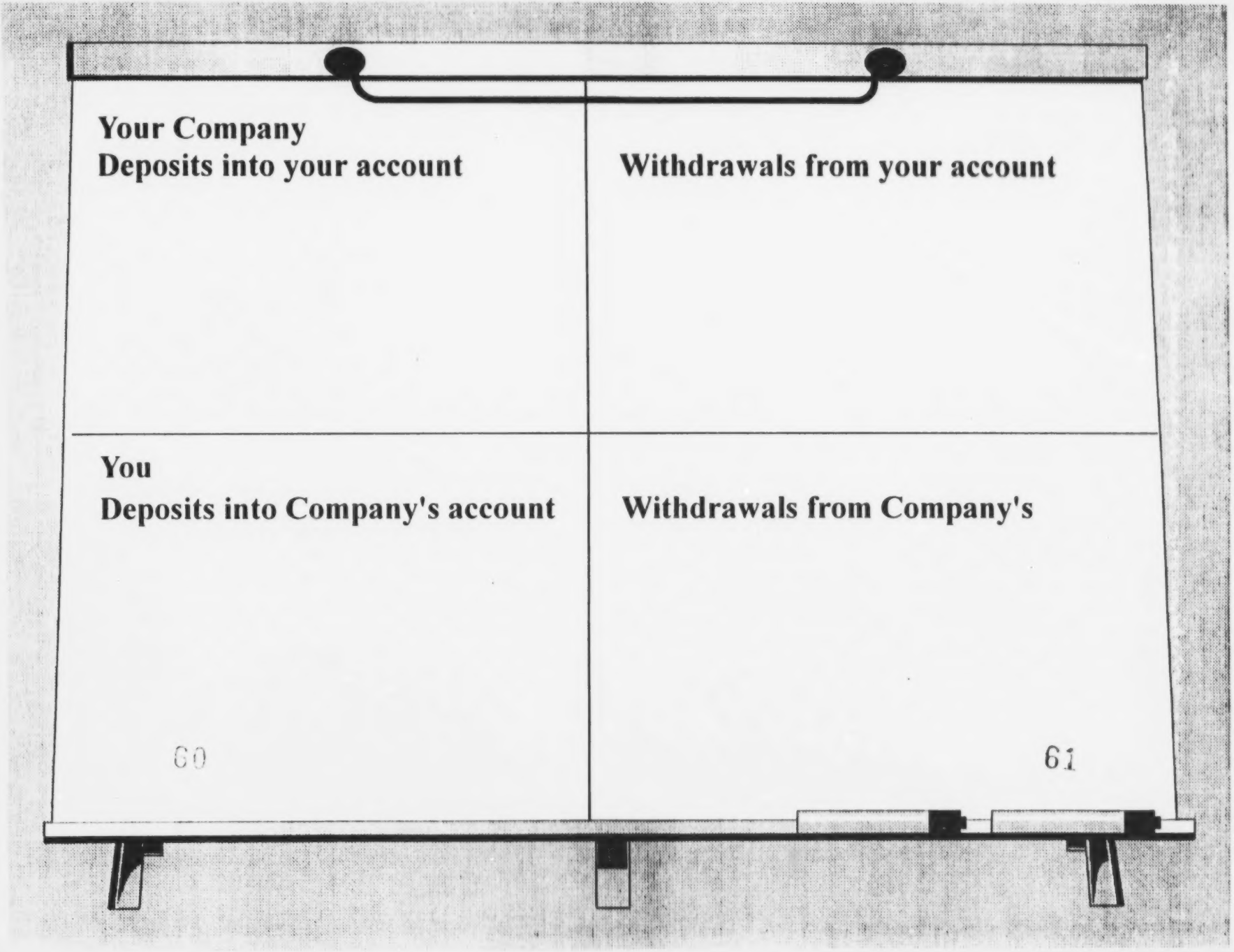
III. **SET: Generate and Explore Solutions**
Encourage students to consider new perspectives as they generate ideas for solutions. If necessary, reread the selection from *Zen and the Art of Motorcycle Maintenance*. Don't depend on what's always been done.

Virtually everyone who joins an organization--whether by joining IBM or by joining another individual in matrimony--does so with two needs: to give something and to get something.

Obviously we want to get something. Money and status, for instance, are among the "motivators" for people seeking organizational employment. And nowadays certainly most of us expect to receive love and affection when we marry.

What may be less obvious is how much--how almost desperately--we humans want to give as well as receive. Most of us have a profound need to be of genuine service to the agencies for which we work, to be truly useful, even essential, in our jobs.

--Taken from *A World Waiting to be Born*
by M. Scott Peck, M.D.


Your Company
Deposits into your account
Withdrawals from your account
You
Deposits into Company's account
Withdrawals from Company's
60
61

Brain Teasers

1. G E L E N I S F	2. ESROH RIDING	3. S M O K E	4. LEFT PRICE
5. TEEXAMRM	6. LISTING LISTING LISTING LISTING	7. FORGOTTE	8. T P G S P N E I
9. 1. FEET 2. HANDS 3. FACE	10 ME/REPEAT	11. BONBNET	12 PERSON

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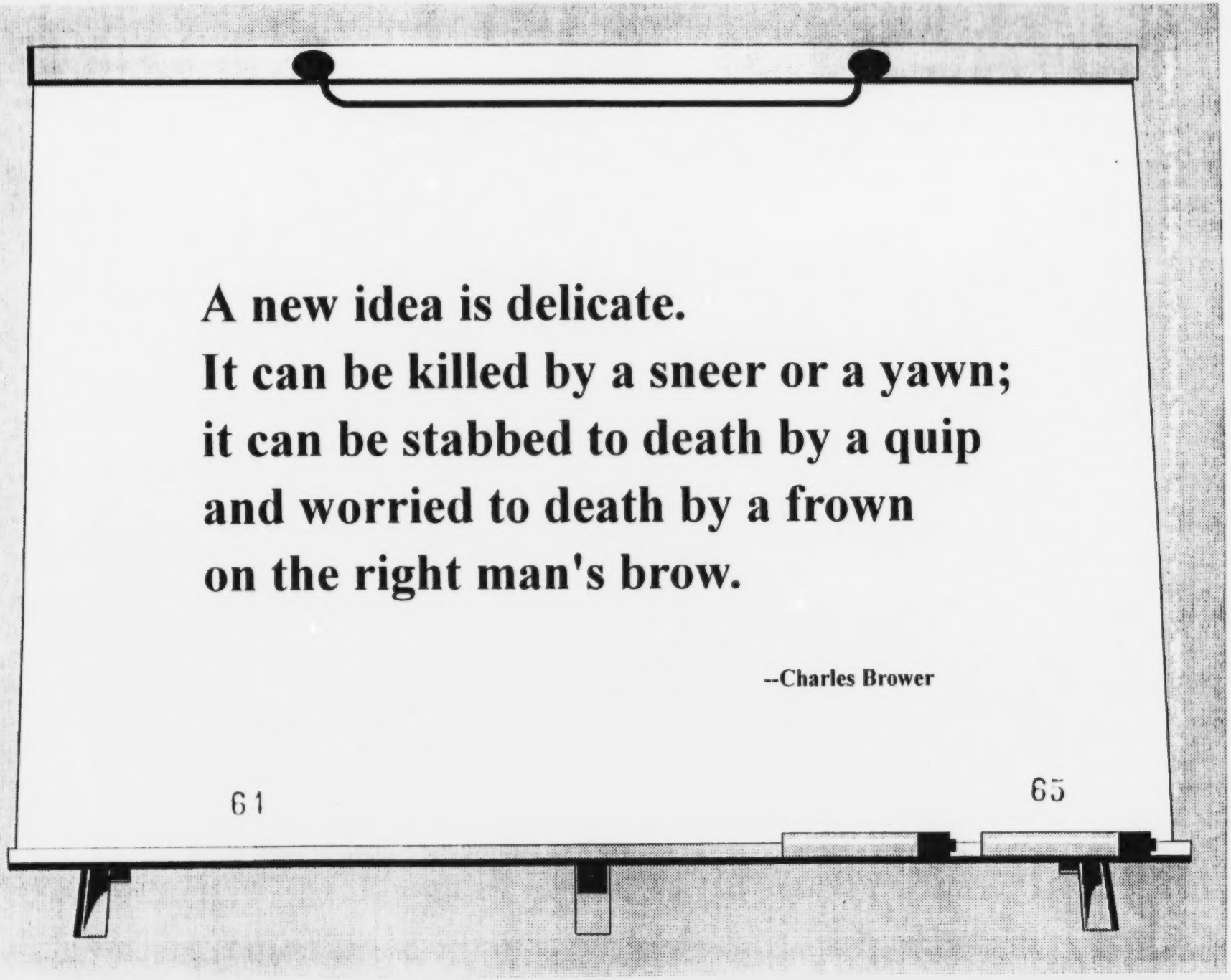

A new idea is delicate.
It can be killed by a sneer or a yawn;
it can be stabbed to death by a quip
and worried to death by a frown
on the right man's brow.
--Charles Brower
61
65

SET:

GENERATE AND EXPLORE SOLUTIONS

SOLUTION FINDING

Brainstorm again

Look for patterns and relationships

Can you break the problem into smaller parts?

Do you have a clear picture of the outcome you're looking for?

Can you work backwards from that goal--breaking the problem into parts and asking yourself questions along the way--to find a solution?

Go for quantity of ideas as well as quality

Piggyback ideas--let one idea trigger another

PROBLEM SOLVING: Workplace Strategies for Thoughtful Change
SESSION IV

"I really like the fact that you took the time to write notes on the daily logs. It means alot to know you read every one."
Problem Solving Student

Rationale:

Now that the problem has been further researched, it's necessary to brainstorm for workable solutions. Again, participants need to step out of their boxes. What new ways do they have to approach familiar problems? The solution-finding grid allows participants to weigh options in a new way.

Learning Intentions:

- Participants will practice brainstorming to generate solutions to the problem.
- Participants will practice using the solution-finding grid to determine the most appropriate solution to their problem.

Curriculum Notes:

- Curriculum notes and references follow course outline.

Course Outline:

I. Warmup: What letter comes next in this series?

W L C N I T _

What comes next in this one?

O T T F F _

II. Review

A. "You can think about your problems or you can worry about them, and there is a vast difference between the two. Worry is thinking that has turned toxic. It is jarring music that goes round and round and never comes to either climax or conclusion. Thinking works its way through problems to conclusions and decisions; worry leaves you in a state of tensely suspended animation. When you worry, you go over the same ground endlessly and come out the same place you started. Thinking makes progress from one place to another; worry remains static. The problem of life is to change worry into thinking and anxiety into creative action."

--Harold B. Walker

B. Revisit process thus far:
Use fluency, flexibility, elaboration, and originality to solve problems

READY-- Brainstorm to define the problem
Use F.A.S.T., WWWWWWH, Webbing
Identify the key problem
Narrow the focus to make the problem more manageable
Collect the data
Organize and analyze the data

SET-- Generate and Explore Solutions
Ask questions
Brainstorm for ideas

III. What solutions have you come up with?

A. List solutions without comment
B. Consider the criteria for choosing a solution
C. Use "Special Interests Analysis" if appropriate
D. Use the solution-finding grid
- Choose criteria
- List possible solutions
- Rank each solution by the criterion

IV. Evaluation

A. Daily Journal
Students record comments about the class, what they've learned and how they can use their new skills on the job.

CURRICULUM NOTES:

I. **Warmup**
The solutions are as follows:
What Comes Next In This Series

One Two Three Four Five Six

III. **C. Use the "Special Interests Analysis"**
Like the deposit/withdrawal exercise, the special interests analysis stretches students to step outside their boxes, to think of perspectives other than their own.

III. **D. Use the solution-finding grid**
The solution-finding grid is an effective way to weigh proposed solutions for their practicality and workability. Most students appreciate having a somewhat objective approach to the process. This is also a good way to prevent pet solutions--good or bad--from automatically becoming the only viable solution. To use the grid, do the following:

CRITERIA
Identify the important criteria that measures a good solutions from a poor one. You might choose things like cost effectiveness, ease of implementation, long-term effectiveness, management and/or employee willingness to implement, and so on. This step is often totally ignored in the problem solving process, yet it should be a central piece. After all, if the apparent best solution won't have employee support, it doesn't matter that it's cheap and fast to implement.

Once the criteria are determined, list the most important ones under CRITERIA. Five is not a magic number here. If you have more or fewer, simply adjust the numbers of columns in the grid.

SOLUTIONS
List the best possible solutions in the grid. Again, if you have more or fewer than five solutions, adjust the grid accordingly. Be cautious about having too few solutions; the more options you have, the more likely it is that you'll have a truly workable one.

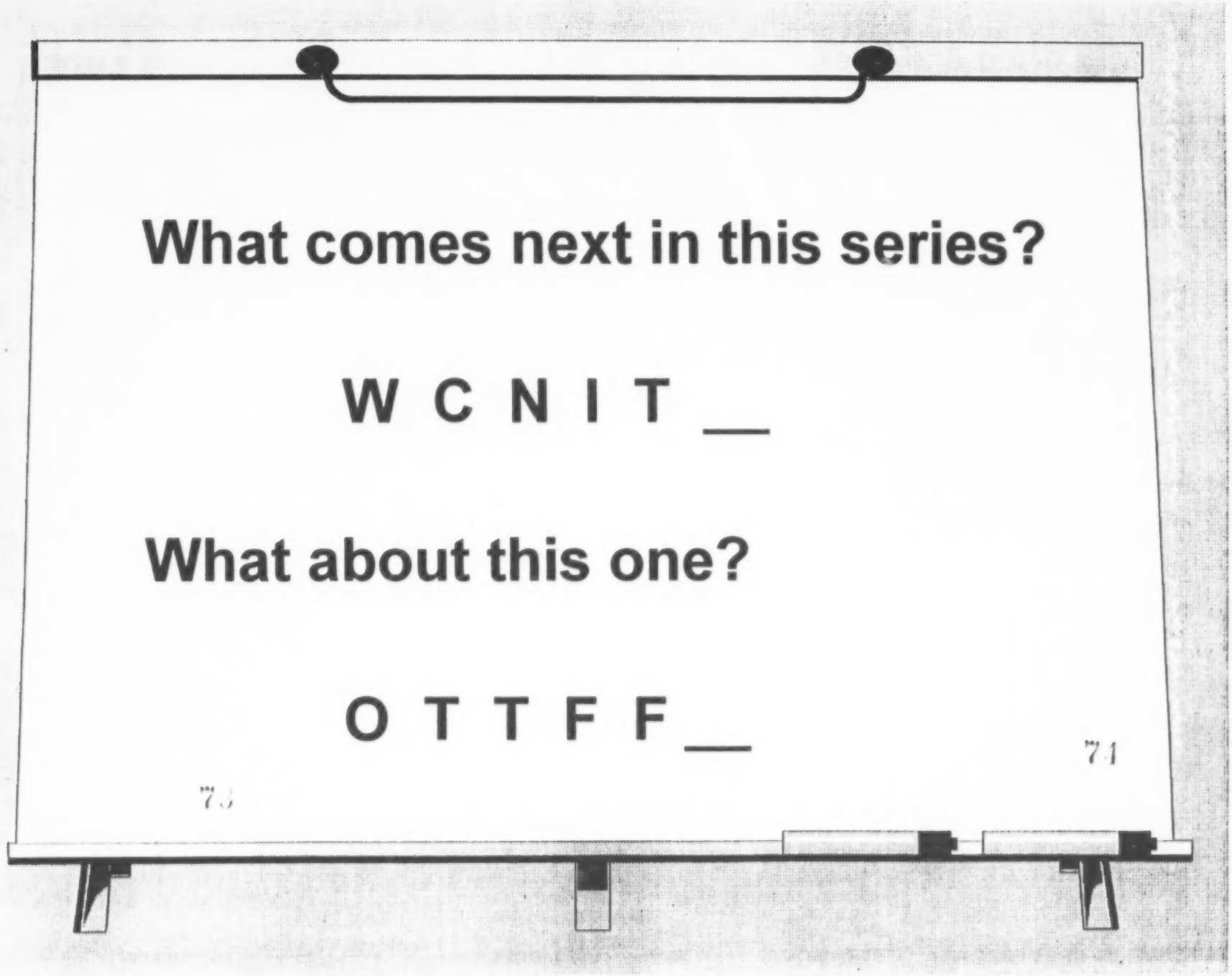
RANKING
Begin with the first criterion and rank each possible solution. Use 5 for the most workable and 1 for the least workable. You'll probably find that it's easiest to identify best, then poorest, then next best, then next poorest. You can either rank them by order (best to worst) or by value (two solutions may merit a 5, one solution a 4, three solutions a two), as long as you're consistent.

CURRICULUM NOTES CONTINUED:

RANKING Continued:
After ranking all of the solutions, total the scores of each line. The solution with the highest score should be the best of the possible choices.

Sometimes, one criterion will be more important than anything else. For instance, initial cost might be far more important than speed of implementation or short-term effectiveness. If so, weight that particular criterion by doubling or tripling the numbers in the column.

OUTCOME
Remember that solution-finding grid is just a tool and that the outcome is not set in concrete. Sometimes several solutions can be combined into one for the most workable outcome.


What comes next in this series?
W C N I T __
What about this one?
O T T F F __
7.3
7.4

You can think about your problems or you can worry about them, and there is a vast difference between the two.

Worry is thinking that has turned toxic. It is jarring music that goes round and round and never comes to either climax or conclusion.

Thinking works its way through problems to conclusions and decisions; worry leaves you in a state of tensely suspended animation. When you worry, you go over the same ground endlessly and come out the same place you started. Thinking makes progress from one place to another; worry remains static.

The problem of life is to change worry into thinking and anxiety into creative action.

--Harold B. Walker

POSSIBLE CRITERIA

Which proposed solution will be easiest to implement?

Which one will be the most economical to implement?

Which one will be the most popular with the personnel or constituency directly involved?

Which one is the most ethical?

Which one will be the most rapidly implemented?

Which one will be the most likely to work?

Which one will management like best?

Which one makes the best business sense?

Which one is the best use of money? Of time?

Will the solution work?

SPECIAL INTERESTS ANALYSIS

PARTIES INVOLVED	CONCERNS AND INTERESTS
1.	
2.	
3.	
4.	
5.	

SPECIAL INTERESTS ANALYSIS

PARTIES INVOLVED	CONCERNS AND INTERESTS
1. Your customer	High quality
2. Your manager	Cost control
3. Team goals	Everyone participates
4. Work center goals	Reduce scrap/spoilage
5. Corporate ideals	Safe for the environment

PROBLEM SOLVING: Workplace Strategies for Thoughtful Change
SESSION V

"Just the idea of being able to help solve a problem will help me and my department alot."

Problem Solving Student

Rationale:

Once the best and most promising solution is chosen, the next step is to implement it. This is best accomplished by identifying specific steps to take, start and finish dates, and who is responsible.

Learning Intentions:

- Participants will develop an implementation plan to put their solution in place.

Curriculum Notes:

- Curriculum notes and references follow course outline.

Course Outline:

I. Warmup

A. WRITE: What advantages and disadvantages would there be if speech showed up in balloons like a cartoon instead of or in addition to sound?

B. What do you see? An old lady or a young woman? How flexible are you in your thinking? Can you view the problem and the solutions from various perspectives?

C. "Creative thinking may simply mean the realization that there is no particular virtue in doing things the way they have always been done."

--Rudolph Flesch

II. Review

A. Revisit the process thus far:

Use fluency, flexibility, elaboration, and originality to solve problems

READY-- Brainstorm to define the problem
Use F.A.S.T., WWWWWH, Webbing
Identify the key problem
Narrow the focus to make the problem more manageable

II. Review Continued:

Collect the data
Organize and analyze the data

SET-- Generate and Explore Solutions
Ask questions
Brainstorm to generate ideas
Identify important criteria
Fill out "Special Interests Analysis"
Complete "Solution-finding Grid"

III. Go: Choose and Implement the Plan

A. Revisit the Solution-finding Grid
- What solution has been identified as the best? Is the solution workable? Is it a good choice for this particular situation at this particular time? Are there several solutions that could be combined or altered to further strengthen the first choice?

B. Develop an Implementation Plan
- Identify and put in order the necessary steps that must be taken to put the plan in place.
- Identify a realistic completion date for the entire plan, as well as individual start and finish dates for each step.
- Identify the person responsible for each step.

IV. Evaluation

A. Daily journal
Students record comments about the class, what they've learned and how they can use their new skills on the job.

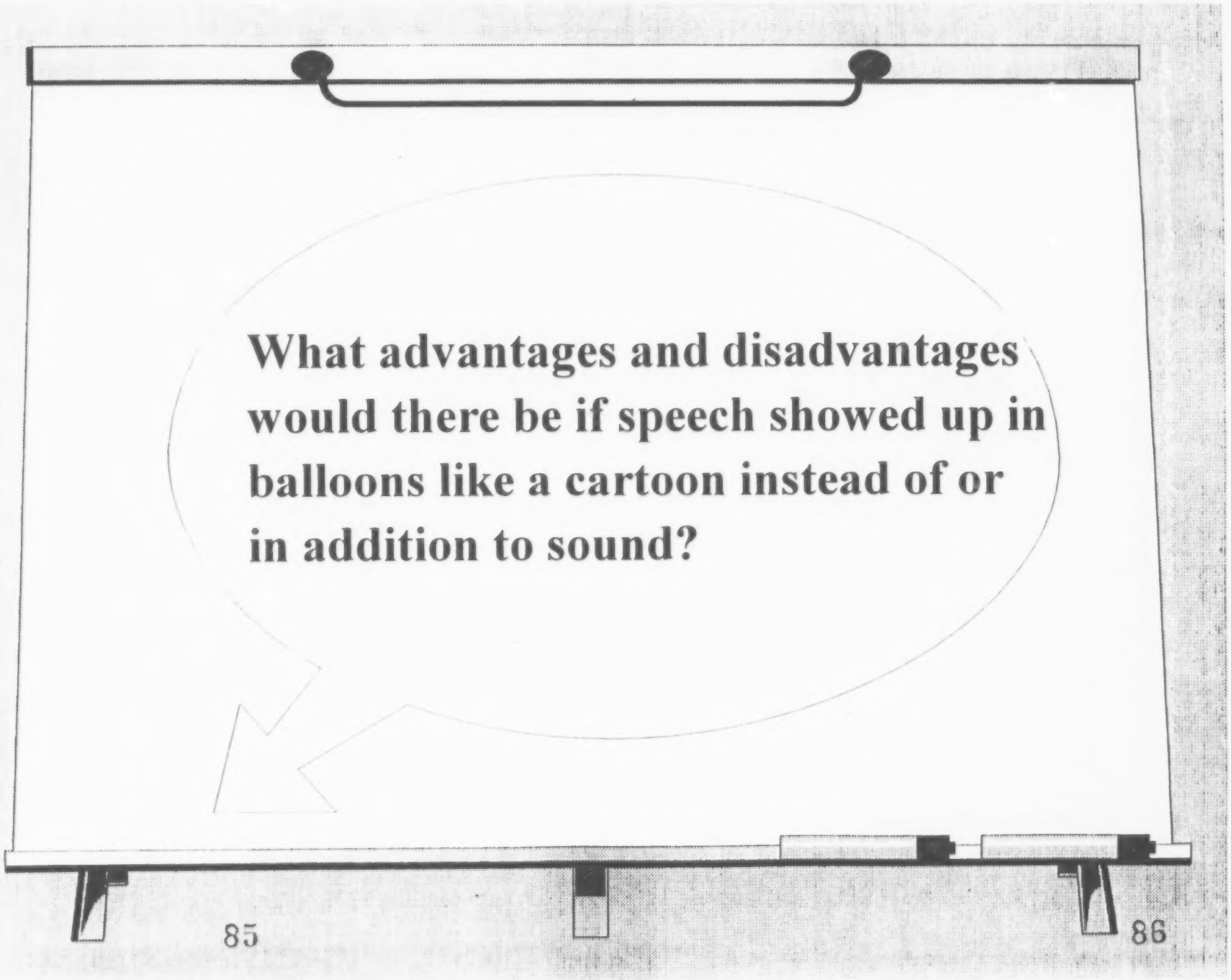
CURRICULUM NOTES:

I. **Warmup**

This can be lots of fun to play with. If students have trouble beginning, start off with questions like the following:
How long would words linger in the air?
What would a crowded room look like?
What would happen if you wanted to tell a secret with someone else in the room?
Would words change depending on volume or emotion?
How would people who can't read communicate?

III. **B. Develop an implementation plan**

The best ideas in the world are useless if someone doesn't follow through and see them to completion. Depending on the problem and solution students have chosen, the implementation may take much longer than the week remaining to them in class. Encourage them to develop their plan according to their skills and time constraints rather than expect you, the instructor, to be responsible. Ideally, once the class is completed in another week, students should feel empowered to follow through based on the skills and strategies they've gained in the class.


What advantages and disadvantages would there be if speech showed up in balloons like a cartoon instead of or in addition to sound?

What Do You See?

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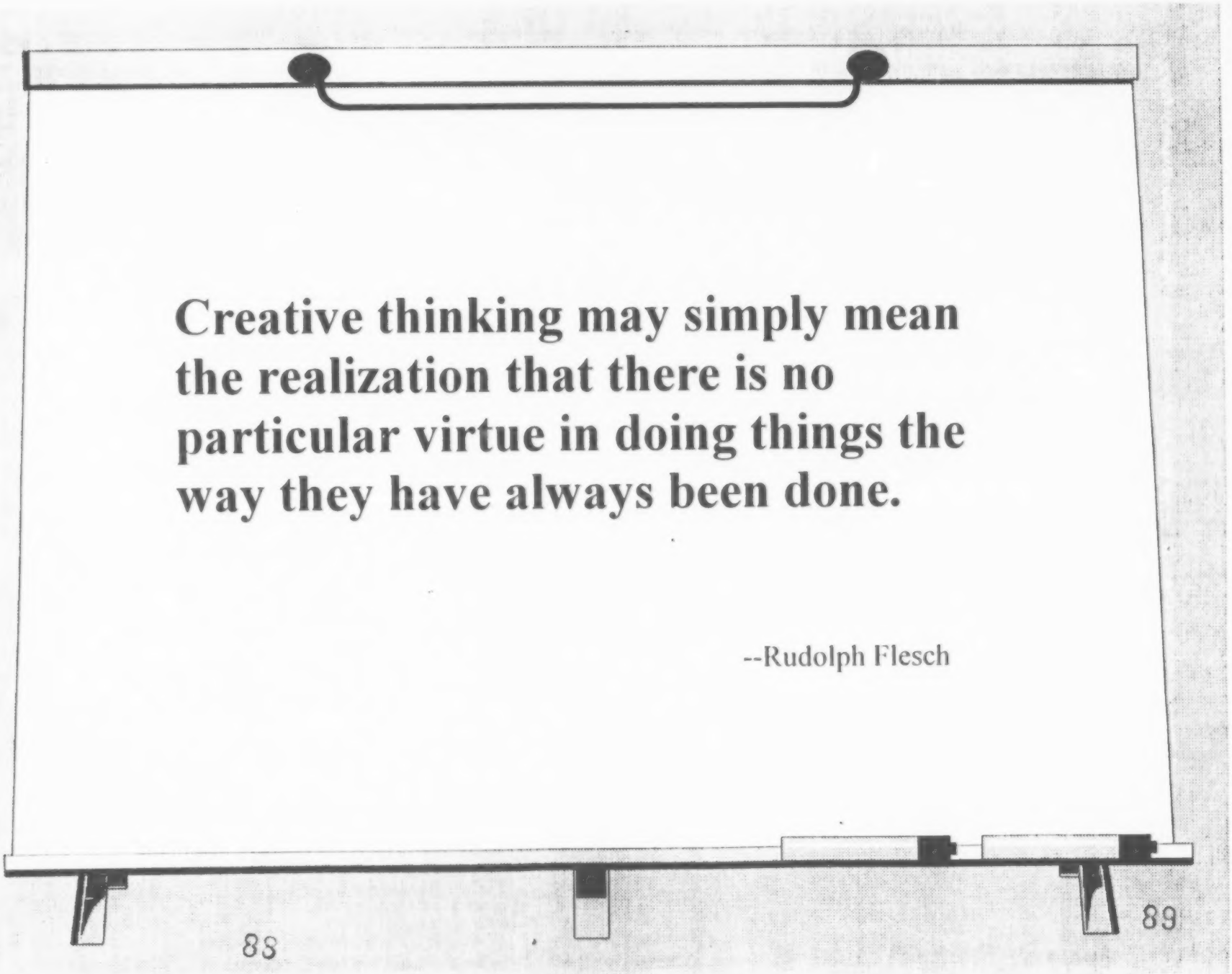

Creative thinking may simply mean the realization that there is no particular virtue in doing things the way they have always been done.
--Rudolph Flesch
88
89

GO:

CHOOSE
AND
IMPLEMENT
THE PLAN

SOLUTION-FINDING GRID

Select the five possible solutions that you think are the most promising. List them on the left side of the grid. Then, rank each of the solutions according to each criterion. Do one criterion at a time, and when you have ranked each possible solution accordingly, move onto the next criterion. The top ranking possible solution should get a 5, the lowest a 1. After you have ranked each solution according to all the criteria, go back and add up the numbers for each possible solution. Record the sum in the column marked TOTAL. Use this information to decide upon your best solution.

POSSIBLE SOLUTIONS:	CRITERIA 1	2	3	4	5	TOTAL
1						
2						
3						
4						
5						

CRITERIA:

1. _____

2. _____

3. _____

4. _____

5. _____

SOLUTION-FINDING GRID

Select the five possible solutions that you think are the most promising. List them on the left side of the grid. Then, rank each of the solutions according to each criterion. Do one criterion at a time, and when you have ranked each possible solution accordingly, move onto the next criterion. The top ranking possible solution should get a 5, the lowest a 1. After you have ranked each solution according to all the criteria, go back and add up the numbers for each possible solution. Record the sum in the column marked TOTAL. Use this information to decide upon your best solution.

POSSIBLE SOLUTIONS:	CRITERIA 1	2	3	4	5	TOTAL
1						
2						
3						
4						
5						

CRITERIA:

1. _____

2. _____

3. _____

4. _____

5. _____

PROBLEM SOLVING: Workplace Strategies for Thoughtful Change
SESSION VI

"My self-esteem has improved during this experience as I worked with people whom I've never met."

Problem Solving Student

Rationale:

The final step in problem solving is to review the entire problem solving process and analyze what went well or poorly and why. This metacognitive process helps participants recognize their own personal strengths and weaknesses. Help them to identify ways to build on their assets and compensate for or improve their shortcomings. If the group has chosen to tackle a real problem and offer real solutions, it may be necessary to take some additional to continue with the implementation process.

Learning Intentions:

- Participants will recognize the value of reflecting on their problem solving process.
- Participants will identify strengths and weaknesses of their problem solving skills.

Curriculum Notes:

- Curriculum notes and references follow course outline.

Course Outline:

I. Warmup

A. Do the "Join the Dots" worksheets

B. List all the things you can think of that are soft.

II. Review

A. Revisit the process thus far:
Use fluency, flexibility, elaboration, and originality to solve problems

READY-- Brainstorm to define the problem
- Use F.A.S.T., WWWWWH, Webbing
- Identify the key problem
- Narrow the focus to make the problem more manageable
- Collect the data
- Organize and analyze the data

SET-- Generate and Explore Solutions
- Ask questions
- Brainstorm to generate ideas
- Identify important criteria
- Fill out "Special Interests Analysis"
- Complete "Solution-finding Grid"

GO-- Choose and Implement the Plan
- Revisit "Solution-finding Grid" and identify the solutions
  - Fill out "Implementation Plan"

III. Continue Implementation

A. Continue with whatever steps are necessary for implementation

IV. And Don't Forget To Look Back: Review the Process and Outcome

A. WRITE and DISCUSS:
Metacognition: Analyzing strengths and weaknesses of the process
What should be done differently next time?

V. Evaluation

A. Daily Journal
Students record comments about the class, what they've learned and how they can use their new skills on the job.

CURRICULUM NOTES:

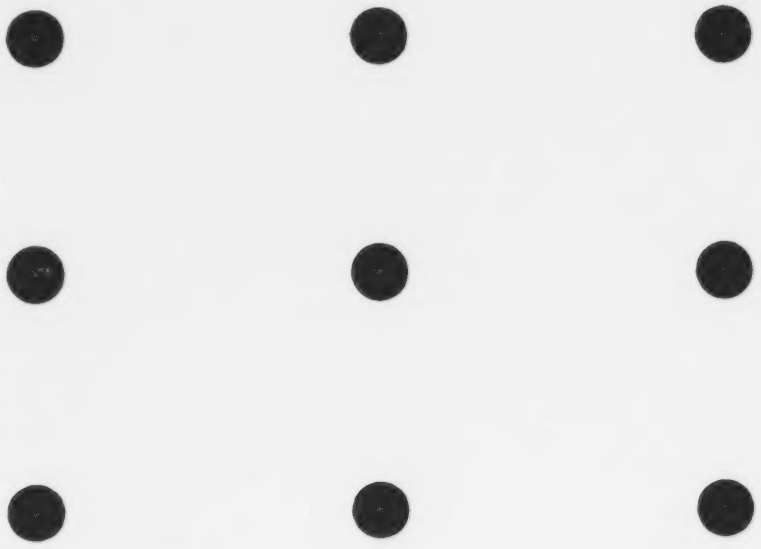
I. **A. Join the Dots**
This is a very literal exercise in "stepping outside the box."

I. **B. List all the things you can think of that are *soft*.**
Encourage as much fluency and flexibility as you can. Think, too, about how the meaning of soft changes. Sometimes it has a positive connotation, sometimes negative, and sometimes it's whatever you bring to it. Here are a few ideas to get you started: soft head, heart, bed, light, bread, whisper, colors, music. Try the same kind of brainstorming with words such as *free* or *light*.

III. **Continue Implementation**
If the group needs it, you may want to spend this time group-writing a memo or following up on what part of the implementation plan has already been put into place.

IV. **A. And don't forget to look back**
Metacognition is an integral part of the learning process. By analyzing what went well and what didn't, students are able to see their problem-solving strengths and weaknesses more clearly. By having them write first and then discuss, they'll be more likely to identify specific areas in the problem-solving process that need to be addressed.

JOIN THE DOTS



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JOIN THE DOTS

JOIN THE DOTS

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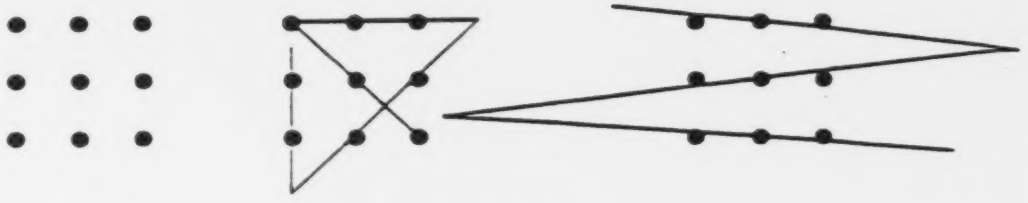
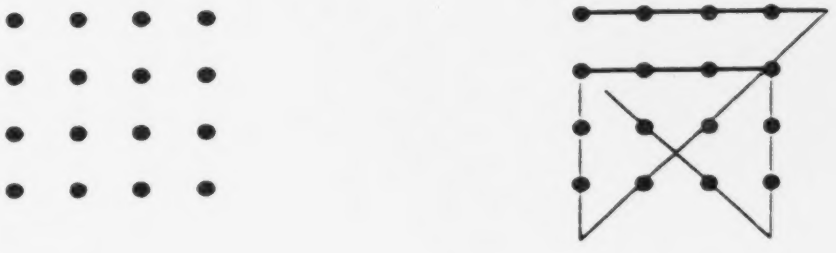
Solution





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McGraw-Hill Book Company, Australia, Sydney,
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List all the things you can think of that are soft.
101
102

What steps have we taken so far?

Fluency, Flexibility, Elaboration, and Originality

READY--

Brainstorm to define the problem

Identify the key problem

Narrow the focus to make the problem more manageable

Collect the data

Organize and analyze the data

SET--

Generate and explore solutions

GO!
CHOOSE
AND IMPLEMENT
THE PLAN
105
106

DEVELOP AN IMPLEMENTATION PLAN

Write up a concise plan specifying action steps, dates and responsibility.

- **List the necessary action steps.**
- **Number the steps in sequence.**
- **Specify the overall completion date**
- **Specify start and finish dates for each step.**
- **Make someone responsible for each step.**
- **Distribute copies of the plan to everyone involved.**

ACTION STEP	Start/Finish Dates	Who's Responsible
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

AND DON'T
FORGET TO LOOK BACK :
REVIEW
THE PROCESS
AND OUTCOME

METACOGNITION

- What part of the process was most productive?
- What part was least productive?
- What should you do differently next time?
- How did the solution finally come to you?
- Can you apply part of this solution to another problem?

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WORKPLACE LEARNING PROGRAM
INSTRUCTOR EVALUATION
CURRENT AND PIKES PEAK COMMUNITY COLLEGE

Please check one response to each question.	Excellent	Very Good	Satisfactory	Needs Improvement	Poor
1. The instructor is organized in his/her teaching of this class.					
2. The instructor projects warmth, friendliness and enthusiasm in his/her presentation.					
3. The instructor returns tests and assignments within one class session.					
4. The instructor encourages student participation in class.					
5. The instructor reacts in a positive manner to students' questions and responses.					
6. The instructor is willing to give individual help when you request it.					
7. The instructor clearly communicates how the course is related to your learning needs.					
8. The instructor is skilled and knowledgeable in the material.					
9. You feel comfortable with asking your instructor to teach what you feel is important to your learning needs.					
10. By reviewing your portfolio, you are familiar with the changes in your own learning.					

What comments do you have that will help in the design of future courses?_____

_____

_____

_____

_____

WORKPLACE LEARNING PROGRAM
PARTICIPANT EVALUATION
CURRENT AND PIKES PEAK COMMUNITY COLLEGE

Please answer the questions which follow. Your responses will help us in making improvements in the course.

1. How would you rate the content of this course?

Too Difficult		Just Right		Too Easy
5	4	3	2	1

2. How would you rate the quality of the instruction materials?

Very Interesting		Somewhat Interesting		Uninteresting
5	4	3	2	1

3. How useful was the course in helping you on the job?

Very Useful		Somewhat Useful		Not Useful
5	4	3	2	1

4. Overall, how satisfied were you with the course?

Very Satisfied		Somewhat Satisfied		Very Dissatisfied
5	4	3	2	1

5. What did you like the best about this course?_____
_____
_____
_____

6. What could have been done to improve the effectiveness of the course?_____
_____
_____
_____

7. How would you rate the quality of the instructional materials?
_____
_____
_____

8. Would you like additional time spent on this subject? Yes_____
No_____ If yes, what specific subjects?_____
_____
_____

9. In what specific ways has this course helped you to do your job better?_____
_____
_____

10. How has this course helped meet goals you set before taking it?

11. Would you recommend this course to a co-worker? Yes_____No_____
Why or Why not?

12. Do you feel more confident about your learning abilities because of this class?

13. Will what you learned in class make a positive, noticeable difference in your outside interests?

STUDENT EVALUATION

Post-Evaluation

Name: _____ **Date:** _____

Course: _____ **Instructor:** _____

GOALS	1 20%	2 40%	3 60%	4 80%	5 100%
I improved my goal in communication.					
I improved my goal in productivity.					
I improved my goal to increase my work attendance.					
I improved my goal to increase my self-esteem.					